

Attorney Docket No.: 06816-073003  
Application No.: 09/933,684  
Amendment dated January 9, 2004  
Reply to Office Action dated October 9, 2003

Amendment to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1-2. (cancelled)

3. (currently amended) A method of forming a membrane electrode assembly, comprising:

obtaining a solid-electrolyte membrane;

first, treating the membrane with a swelling agent, to swell the membrane to form a swelled membrane;

first after said treating, applying a first catalyst ink which includes platinum directly onto a first surface of said swelled membrane;

second applying a second catalyst ink which includes platinum directly onto a second surface of said swelled membrane;

first placing a first support substrate on said first surface of said membrane;

second placing a second support substrate on said second surface of said membrane; and

bonding said first support substrate, said membrane, and said second substrate forming a membrane electrode assembly.

Attorney Docket No.: 06816-073003  
Application No.: 09/933,684  
Amendment dated January 9, 2004  
Reply to Office Action dated October 9, 2003

4. (original) A method as in claim 3, wherein said first applying is pouring said first catalyst ink onto said membrane.

5. (original) A method as in claim 3, wherein said second applying is pouring said second catalyst ink onto said membrane.

6. (original) A method as in claim 4, wherein said first catalyst ink is formed from a mixture having about 7-10% catalyst, about 60-70% of NAFION(TM) solution, 15-20% of PTFE-30 that is diluted to 11% in solids, and a viscosity adjusted for pouring.

7. (original) A method as in claim 5, wherein said second catalyst ink is formed from a mixture having about 7-10% catalyst, about 60-70% of NAFION(TM) solution, 15-20% of PTFE-30 that is diluted to 11% in solids, and a viscosity adjusted for pouring.

8. (original) A method as in claim 3, wherein said first support substrate is carbon paper.

9. (original) A method as in claim 3, wherein said second support substrate is carbon paper.

Attorney Docket No.: 06816-073003  
Application No.: 09/933,684  
Amendment dated January 9, 2004  
Reply to Office Action dated October 9, 2003

10. (original) A method as in claim 3, wherein said first applying is spraying said first catalyst ink onto said membrane.

11. (original) A method as in claim 3, wherein said second applying is spraying said second catalyst ink onto said membrane.

12. (original) A method as in claim 10, wherein said first catalyst ink is formed from a mixture having about 7-10% catalyst, about 60-70% of NAFION(TM) solution, 15-20% of PTFE-30 that is diluted to 11% in solids, and a viscosity adjusted for spraying.

13. (original) A method as in claim 11, wherein said second catalyst ink is formed from a mixture having about 7-10% catalyst, about 60-70% of NAFION(TM) solution, 15-20% of PTFE-30 that is diluted to 11% in solids, and a viscosity adjusted for spraying.

14. (new) A method as in claim 3, wherein said swelling comprises soaking the membrane in a combination of water and an aliphatic alcohol.

Attorney Docket No.: 06816-073003  
Application No.: 09/933,684  
Amendment dated January 9, 2004  
Reply to Office Action dated October 9, 2003

15. (new) A method as in claim 14, wherein said swelling comprises solutions between 10% and 90% of isopropanol in water.

16. (new) A method as in claim 3, wherein said first and second applying comprises applying catalyst at a level of 2 to 3 mg per centimeter squared.